engraftment is given. We report a case of a 64-year-old female with multiple myeloma and secondary engraftment failure after high dose chemotherapy with autologous hematopoietic stem cell transplantation (AHSCT) on day +64. The patient presented with severe pancytopenia and a bone marrow biopsy and aspirates revealed a hypocellular marrow without increased plasma cells. An extensive infectious disease work up was negative for bacterial, fungal or viral source including cytomegalovirus, HHV 6, parovirus, BK virus, and adenovirus. The patient received stem cell boost on day +98 and failed to engraft. A repeat bone marrow biopsy performed on day +127 revealed less than 10% cellularity with no signs of hematopoiesis and no plasma cells. Therefore, the patient met the criteria for severe aplastic anemia (AA). The patient was initiated on eltrombopaq after one week treatment of steroid and cyclosporine with minimal improvement in neutrophil counts. Although uncommon, the case study examines the rare occurrence of AA in the post-transplant population. The case report highlights that secondary engraftment failure and AA are uncommon complications of AHSCT and can be life threatening. Careful clinical evaluation and pathology review are necessary to determine the cause of graft failure in the autologous transplant setting in order to provide the appropriate medical and supportive care.

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Contributing Factors to Renal Dysfunction during Engraftment Syndrome

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Purpose: Engraftment syndrome (ES) is a complication of autologous hematopoietic stem cell transplantation (HSCT) characterized by non-infectious fever, skin rash, diarrhea, and inflammatory manifestations. Acute renal dysfunction is a less frequently reported complication of ES, occurring in up to 26% of patients. No prior investigation has identified specific risk factors for developing acute renal failure in this patient population. The objective of this study is to determine risk factors associated with the development of acute renal dysfunction in patients with ES.

Methods: This study will be submitted to the University of Texas Health Science Center and Veterans Affairs Institutional Review Board for approval. This retrospective cohort study will identify all patients receiving autologous HSCT from January 2011 to December 2013 at a single institution. Patients with a diagnosis of ES (per the Maiolino criteria: non-infectious fever plus one of the following: skin rash, pulmonary infiltrates, or diarrhea which commences 24 hours before, or any time after appearance of neutrophils) will be identified. Potential risk factors that may lead to the development of acute renal dysfunction during the time of ES will be analyzed. Data collected will include: baseline demographics, underlying malignancy, comorbid conditions, mobilization regimen, conditioning regimen, number of CD34 cells infused, time of engraftment, date of first fever, physical examination, medications, clinical lab values, and length of hospital admission. Descriptive statistical analyses will be performed for discrete variables by using Pearson's chi-squared test or Fisher's exact test appropriately. Risk factors will be analyzed using a backward stepwise logistic regression model.

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Long-Term Outcomes of 133 Patients with Intermediate-Risk Acute Myeloid Leukemia Treated with High-Dose Chemotherapy and Autologous Stem Cell Rescue in First Complete Remission

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Background: In 2014, high-dose chemotherapy with autologous stem cell rescue (autoSCT) was removed from the NCCN guidelines as a recommended treatment for patients <60 years old with intermediate-risk (int-risk) AML in first complete remission (CR1). We comprehensively reviewed the long-term outcomes of all patients with int-risk AML treated with autoSCT in CR1 at our institution.

Patients and Methods: This is a retrospective, single institution study of all patients with int-risk AML treated with autoSCT in CR1 between 1988-2013. Data were collected by chart review. Publicly available death indices were accessed to ensure accurate dates of death, with censoring of data on September 1, 2014. For all analyses, patients with <1 year follow-up were considered to have relapsed at the date of last follow-up. Statistical analyses were performed using STATA SE 9.

Results: We identified 133 patients with int-risk AML who underwent autoSCT in CR1. Cytogenetics were diploid in 97 (73%); FLT3 mutation status was only assessed routinely after 2008 (21 patients total, 17/21 negative).

Of the 133 patients, 55% were women and 69% were Caucasian. Median age at autoSCT was 47 years (range 20-72). Mean CD34+ cell dose infused was 13 x 10^6/kg (range 2.6-63). Ten percent of patients were treated pre-1993 with bone marrow stem cells and PO busulfan (BU), 28% between 1993-2003 with peripheral blood stem cells (PBSCs) and PO BU, 35% between 2003-2007 with PBSCs and IV BU, and 28% post-2007 with PBSCs and targeted IV BU (all with 60mg/kg IV etoposide).

With a median follow-up of 4.3 years (range 0.1-17), median relapse-free survival (RFS) has not been reached; 52% of patients remain relapse-free. Fourteen (10%) patients developed therapy-related MDS or AML. In multivariate analysis, relapse was predicted by non-Caucasian race (HR 2.5, p=0.001) and by treatment era post-2007 (HR 1.85, p=0.025). Median overall survival (OS) for the entire cohort is 6.6 years (range 0.1-17).

Twenty-six of 54 relapsing patients (48%) subsequently received an alloSCT, with 16 (62%) proceeding to alloSCT in CR2 and 7 (27%) with active disease. Twelve (46%) patients relapsed following alloSCT. Of the 26 alloSCT patients, 9 (35%) died from treatment-related causes and 9 (35%) from AML relapse. Median follow-up for patients receiving salvage alloSCT is 3.8 years (range 0.17-7.8) with 8 (31%) patients known to be alive and in remission. Median RFS after alloSCT is 2.5 years (range 0.02-4.32).

Conclusions: More than half of patients with int-risk AML in CR1 achieved sustained remissions using autoSCT. Of those who relapse, nearly 50% proceed to alloSCT and 31% are long-term disease-free survivors. Relapse-free survival has likely decreased in the most recent era due to changes in patient selection. AutoSCT remains a reasonable option for int-risk patients with AML in CR1, with outcomes rivaling those currently achieved with alternative donor alloSCT.

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Incidence of Adrenal Insufficiency in Patients with Multiple Myeloma during High Dose Chemotherapy and Autologous Stem Cell Transplant

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Background: High dose chemotherapy (HDC) followed by autologous stem cell transplant (ASCT) is considered the standard of care for patients with multiple myeloma (MM). With most patients receiving induction therapy that includes corticosteroids. The combined effect of prior therapy for myeloma and ASCT related complications may result in hypotension and require intensive medical treatment. To date the incidence of adrenal insufficiency in the setting of ASCT is unknown. The effects of this underlying disorder in regards to post transplant outcome remain unknown as well. We set out to compare the outcomes of patients with multiple myeloma who underwent ASCT with adrenal insufficiency compared to those with sufficient adrenal function.

Methods: This was a prospective study in 13 consecutive patients with MM admitted for HDC and ASCT at Henry Ford Hospital between February 2014 through June 2014, with the first patient sample being obtained in on 2/14/2014 and last sample recorded in 6/23/2014. Random cortisol levels were obtained on the day of admission or day -2 (Figure 1), prior to the start of HDC. All prior therapies included corticosteroids and consisted of the following RVD, DCEP, RD, VD, DT-PACE. Patients were classified into two groups those with cortisol levels $>$ 5 and those patients who had cortisol levels $<$5. Endpoints analyzed included hypotension, septic shock, and duration of antibiotic therapy.

Results: Of the 13 patients analyzed the median age was 60 years old (range 53-78), gender 8 male patients 5 female. All patients underwent HDC with Melphalan and ASCT. Of the 13 patients in which data was obtained 3/13 23% had adrenal insufficiency prior to high dose Melphalan and ASCT. With a median cortisol level of 3.2 in the patient cohort who were found to be adrenal insufficient. The incidence of hypotension was 2/3 66% in the adrenal insufficient patients compared 1/10 10% in the cohort with sufficient adrenal function. Septic shock occurred in 2/3 66% of the adrenal insufficient compared to 0/10 in the adrenal sufficient group. The median duration of antibiotic therapy was 5 days in the adrenal insufficient cohort compared to 2 days in the patients with adequate adrenal function.

Conclusion: In this small cohort of consecutive patients from a single center, we found that there was a high incidence of adrenal insufficiency 23% in patients undergoing ASCT. The treatment regimens varied in the study group with all patients receiving corticosteroid therapy in their induction regimen. Given the unexpectedly high incidence of adrenal insufficiency a consideration should be given to check a random cortisol level prior to the initiation of HDC. Supplemental therapy or treatment should be considered in this high risk group to avoid unnecessary complications and prolonged antibiotic use and supportive care in this patient cohort.

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Stem Cell Infusion Adverse Reaction (SCIAR). Review of Published Literature from Recent Years

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Background: SCIAR are often seen during transplants, but enough data are not available. In the past SCIAR were attributed to adverse event (AE) from DMSO.

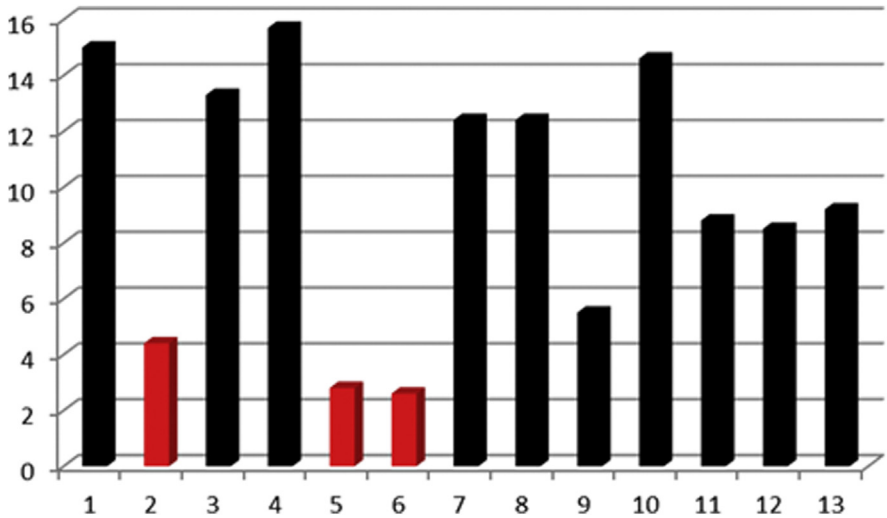

Figure 1.